

WHAT IS CLAIMED IS:

1. A storage system with a snapshot-backup capability electrically coupled to a main system, comprising:

a storage device including at least a first data block and a second data block in response to the first data block; and

a storage controlling unit for receiving at least a newly stored data transmitted from the main system, in accordance with distribution of each data in said data blocks of the storage device, determining whether there is any difference found between the newly stored data and at least a previously stored data located in the first data block, thereby backing up each different previously stored data from the first data block to the second data block, and then storing the corresponding different newly stored data to the first data block where the different previously stored data is located as long as there is any one different data found between the newly and previously stored data.

2. The storage system of claim 1, wherein the storage device is as a multi-storage-disk array.

3. The storage system of claim 1, wherein the distribution of each data stored in said data blocks of the storage device is recorded in a block-mapping table.

4. The storage system of claim 3, wherein the backup process of the different previously stored data of the first data block to the second data block is recorded in the block-mapping table.

5. The storage system of claim 3, wherein the storing process of the corresponding different newly stored data to the first data block is recorded in the block-mapping table.

6. The storage system of claim 1, wherein the storage controlling unit includes at least a chip controller and an embedded driver software.

7. A storage system with a snapshot-backup capability electrically coupled to a main system, comprising:

a storage controlling unit for receiving and processing commands and data from the main system , disposed in an interface card; and

5 a storage device electrically coupled to an I/O port formed on the interface card, consisting of at least a first data block and a second data block in response to the first data block wherein

upon receiving at least a newly stored data transmitted from the main system, the storage controlling unit determines whether there is any difference found between the  
10 newly stored data and at least a previously stored data located in the first data block thereby backing up each difference previously stored data from the first data block to the second data block, and then storing the corresponding different newly stored data through the I/O port to the first data block where the different previously stored data is located as long as there is any one different data found between the newly and previously stored  
15 data.

8. The storage system of claim 7, wherein the storage device connected with the I/O port includes a multiple-disk data storage array.

9. The storage system of claim 7, wherein the storage controlling unit, according to a block-mapping table, identifies the difference between the newly received data and  
20 the previously stored data both which share the same entry defined in the block-mapping table.

10. The storage system of claim 9, wherein the backup process of the different previously stored data to the second data block is recorded in said block-mapping table.

11. The storage system of claim 9, wherein the storing process of the different newly stored data to the first data block is recorded in the block-mapping table.

12. The storage system of claim 7, wherein the storage controlling unit consists of at least a chip controller and an embedded driver software.

5        13. A storage system with a snapshot-backup capability electrically coupled to a motherboard having a main system, comprising:

        a storage controlling unit for receiving and processing at least a newly stored data transmitted from the main system, disposed in the motherboard; and

        a storage device electrically coupled to a system bus formed on the motherboard,  
10        consisting of at least a first data block and a second data block in response to the first data block wherein

        upon receiving the newly stored data from the main system, the storage controlling unit determines whether there is any difference found between the newly stored data and at least a previously stored data located in the first data block thereby  
15        backing up each different previously stored data from the first data block to the second data block, and then storing the corresponding different newly stored data through the system bus of the motherboard to the first data block where said different previously stored data is located as long as there is any one different data found between the newly and previously stored data.

20        14. The storage system of claim 13, wherein the storage device connected with the system bus includes multiple-disk data storage array.

        15. The storage system of claim 13, wherein the storage controlling unit, according to a block-mapping table, identifies the difference between the newly received

data and the previously stored data both which share the same entry in the block-mapping table.

16. The storage system of claim 15, wherein the backup process of the different previously stored data to the second data block is recorded in the block-mapping table.

5        17. The storage system of claim 15, wherein the storing process of the different newly stored data to the first data block is recorded in the block-mapping table.

18. The storage system as described in claim 13, wherein the storage controlling unit includes at least a chip controller and an embedded driver software.

19. A storage method for facilitating a snapshot-backup capability within a  
10 storage system, the storage system having a storage device, the storage device having multiple primary data blocks and multiple backup data blocks, the method comprising:

receiving at least a newly stored data transmitted from a main system;

comparing the newly stored data with at least a previously stored data located on the data blocks, which is corresponding to the newly stored data by the storage system;

15 and

backing up each different previously stored data from the primary data block to the backup data block, and then storing the corresponding different newly stored data to the primary data block where the different previously stored data is located as long as there is any one different data found between the newly and the previously stored data.

20        20. The storage method as defined in claim 19, further comprising:

examining a block-mapping table to find out the different previously stored data corresponding to each newly received data;

within the backup process of the different previously stored data, a mapping process of the previously stored data to the backup data block is recorded in the block-mapping table; and

5        within the storing process of the corresponding different newly stored data to the primary data block, a covering process of the different newly received stored data to the primary data block where the different previously stored data is located is recorded in the block-mapping table.